

Fusion programme

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THE story of construction and operation of nuclear power stations in India is a saga of persistence against odds and ingenuity in the absence of help from outside. The details of the story are not known to many. "Atomic Energy in India — 50 years has endeavoured to provide just those details, and more, unknown to most of us.

The book begins with due obeisance to Dr Homi Bhabha, the visionary who conceived the atomic energy programme for India, "a programme of enormous diversity," and placed it on a solid foundation. The authors take the reader on a fairly comfortable ride through this story of enormous diversity.

The story started with the dream of one man who gathered around him a group of talented and highly committed young scientists and engineers. Together, and with unstinted support of the prime ministers of India starting with Pandit Jawaharlal Nehru, they built an atomic energy establishment that covered almost every aspect of atomic energy as well as the setting up of centres of excellence for fundamental research for Bhabha knew that "no country, which wishes to play a leading part in the world, can afford to neglect pure or long term research."

Bhabha was deeply concerned about the problems of development of India and he believed that atomic energy would be the major source of Energy of the future, which could propel India to progress and he launched a massive programme of self-reliant atomic energy programme in the country. He started setting up small research reactors and the book under review gives brief accounts of these reactors, Apsara, Circus, Zerlina, Purnima, Dhruva and so on. Each of these reactors tried different technologies and the young

scientists and engineers had first-hand experience in design and construction of nuclear reactors, their operation and maintenance.

A large research centre called the Trombay Establishment was set up for research and development and for projects undertaken for the industry and power sectors. The Trombay Establishment was renamed the Bhabha Atomic Research Centre (BARC) after Bhabha's tragic death in 1966. This establishment which started with 500 (200 scientific, 190 technical, 70 administrative and 40 auxiliary) members in 1957 has now grown to 14,000 (4000 scientific, 6400 technical, 1000 administrative and 2600 auxiliary) staff by 1997 and is the largest scientific centre of the country.

The book provides all these details and goes on to describe briefly the various activities undertaken by BARC and the vast

various projects undertaken by Department of Atomic Energy (DAE) and the authors have given due credit to these individuals. The profiles of pioneers which include the well-known names such as Dr Vikram Sarabhai, Dr H N Sethna, Dr Raja Ramanna, Dr Brahm Prakash and others are also informative.

A large number of photographs included in the book is indeed an attractive feature and they add to the historic interest of the book.

The authors provide fairly detailed accounts of the setting up of the atomic power stations such as those at Tarapur, Rajasthan, Madras and so on, their teething problems, the difficulties with foreign collaboration, particularly after Pokhran I nuclear test and also the self-sufficiency that India has been attaining in the process. The authors could have provided some details about the present installed capacity of nuclear plants,

ATOMIC ENERGY IN INDIA — 50 YEARS
By C V Sundaram, L V Krishnan and T S Iyengar
Department of Atomic Energy, 1998, pp 277

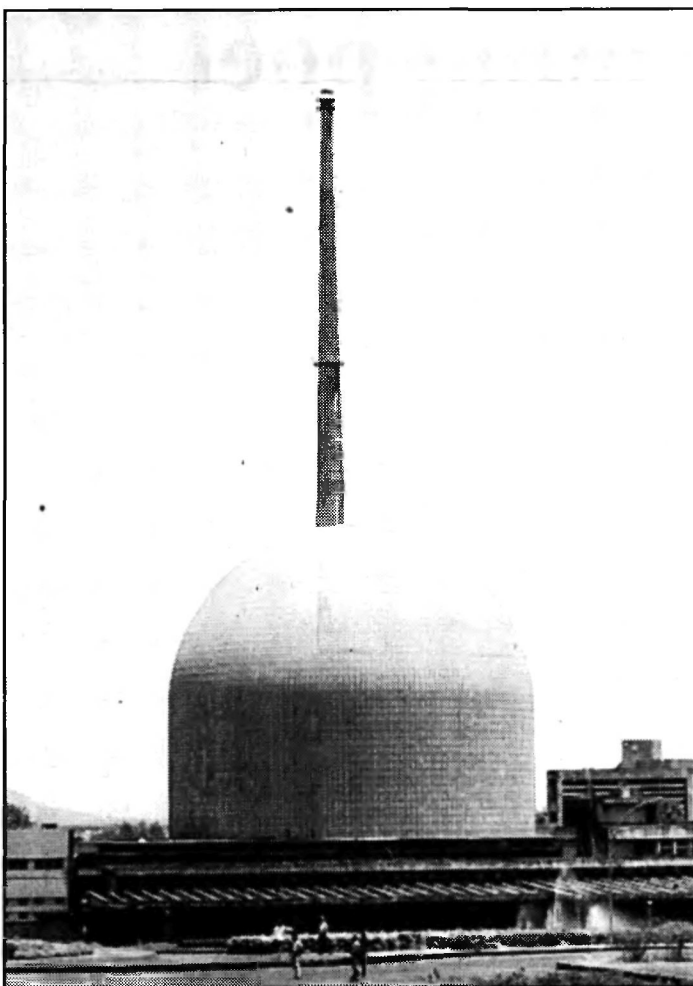
areas of expertise that developed within this Centre Reactor Engineering, Nuclear Medicine, Food Technology, Human Resource Development are only a few of the multifarious activities of this Research Centre. The book recounts how DAE activities have spread all over the country. Accounts of the nuclear fuel cycle, radio-active waste management, the heavy water programme and most importantly safety measures and their development are fairly informative.

One noticeable and commendable feature of this book is the care with which the authors have mentioned the names of relatively unknown individuals who have been responsible for the success of

their annual generation, plant load factor, frequency of outage and so on in a tabular form for ready reference. Even after 50 years, atomic energy constitutes less than 3 per cent of the total generation in India. To quote the authors, "somehow there has been a general impression that government investments in the atomic energy programme have been relatively large, and the results have been slow in coming." The justification offered by the authors does not bear conviction. The authors attribute the slow progress to the paucity of funds. It appears, however, from the frank and illuminating interview (pg 183-204) of Dr Chidambaram, chairman, Indian Atomic Energy Commission, by Dr C V Sundaram (the first author of the book) that following Dr Bhabha's death the programme of Peaceful Nuclear Explosions (PNE) was taken up. This culminated in the nuclear tests at Pokhran in 1974 and 1998. Has the priority of the DAE shifted from nuclear energy production to PNE, accounting for the slow growth of the former? This is not very clear from the book although the authors comment that "safe and economical power will continue to be the main mandate of the DAE" and think, perhaps wishfully, that DAE will add 50,000 MW to the power grid by the year 2050.

The authors give a brief account of Pokhran tests with quotations from Dr Raja Ramanna after Pokhran I and from Mr A B Vajpayee after Pokhran II, in strong justification of these tests.

That all three authors 'grew up with the entire programme' of DAE contributes at once to the strength and the weakness of the book. Their familiarity with the programme lends authenticity to the account but their long involvement naturally impairs a critical analysis. Their wish expressed in the preface that, "we sincerely hope it (this book) encourages more attempts, different in approach and scope, deeper in analysis" may perhaps be fulfilled only by an independent study.



A reactor at the Bhabha Atomic Research Centre, Bombay